vol. xliv. (E. C. Pickering, Revision of the Harvard Photometry), presented by the Observatory; Royal Observatory, Lisbon, O Eclipse de Sol de 1900 Maio 28, presented by the Observatory; Facsimile of Captain Cook's original Observation of the Transit of *Venus*, 1769 (lantern slide), presented by Rev. E. Ledger.

On the Alleged Rotation of the Spiral Nebula Messier 51 *Canum Venaticorum.* By H. H. Turner, M.A., F.R.S., Savilian Professor.

In his recently published second volume of *Photographs of Stars, Star Clusters, and Nebulæ* Dr. Isaac Roberts gives measures of a photograph of M 51, taken in 1898, and a comparison with Lord Rosse's measures in 1872–74, whence he suggests that the nebula has rotated round its central nucleus through over 100′ in 47 years. As a movement of this magnitude in a nebula, if well established, is naturally of the first importance, I wrote to Dr. Roberts asking for particulars as to his determination of the zero of position-angle. He very kindly sent me full particulars and a copy of the original negative. On this copy I found that there were three Groombridge stars, also contained therefore in the Radcliffe (1845·0) Catalogue; and that these have been recently observed at Greenwich and will appear in the forthcoming Ten-year (1890·0) Catalogue. Places of these stars, which were kindly supplied by the Astronomer Royal, give an independent check on the zero of position-angle, and my measures of the plate indicate a zero differing by about a degree from that of Dr. Roberts. This would mean that a large part, if not the whole, of the movement assigned by him to the nebula may be due to instrumental error.

The reasons for believing that the position-angles are affected with systematic error were given in full, as was only proper in challenging the accuracy of the work of another astronomer; and I wrote to Dr. Roberts informing him of my results. He lost no time in re-examining the question, and I received from him, under date May 8, the following letter :—

"Referring to the spiral nebula M 51 *Canum*, I have obtained two photographs upon which are *star-trails* : one trail on each plate extends across the nebula. By measurements from these I find a difference of 1° 19′ in the zero of the centre of the nebula when it is compared with the zero deduced by interpolated trails, upon which I relied in the measurement of position-angles published in my second volume. Consequently the position-angles therein given on pp. 25 and 109 are 1° 19′ in excess, and this correction will have to be applied when comparisons are made with other measurements.

"I intend shortly to send to each possessor of vol. ii. a note of this and of four minor *errata* which have been found in the volume."

(Signed) "ISAAC ROBERTS."

As it is clearly preferable that a correction of this kind should be announced by the author himself, I withdraw my paper, which arrives at substantially the same result. Perhaps I may be permitted to add a word or two of cordial recognition of the way in which Dr. Roberts has throughout spared no pains to establish the truth, whatever it might be. He placed all possible information in my hands for elucidating the matter; and, when I found cause to suspect an error, lost no time in independently examining his results. His re-examination at first conducted him again to his published conclusion; but he was not content until he had checked it in yet another way by new photographs, with the result above quoted.

The Duration of the greater Sun-spot Disturbances for the years 1881–99. By the Rev. A. L. Cortie, S.J.

The number of solar drawings made at Stonyhurst during the last nineteen years amounts to 3,454, or an average of slightly over 180 each year. All the chief disturbances that have occurred during this period have been drawn at some time of their life history. In order to study the possible connection between individual magnetic storms and solar spot outbursts Father Sidgreaves has caused all the chief solar disturbances that have been recorded during these years to be charted, and their life histories to be entered in a ledger. These charts and ledger have been made use of in drawing up the present paper. The charts bear each a rotation number in continuation of Carrington's numbers, and cover the rotations from 364 to 618. Only the larger spot groups, whether single or composite in character, have been selected for entry—such as reached an area of $\frac{1}{1000}$ of the visible solar hemisphere during any part of their life history. A few other groups have been admitted, on account of their being either recurrences of these greater disturbances, or in some way connected with them. The number of such disturbances that have appeared during the 255 solar rotations under discussion amounts to 115. The present paper deals chiefly with the duration of these greater solar disturbances.

In the following table the first column gives the year, and the second the number of the groups according to the Stonyhurst charts. Those numbers which bear an asterisk denote groups that were both born and died in the visible solar hemisphere. Groups which are bracketed are obviously connected as recurrences of the same disturbance. The third and fourth columns